SOIL SURVEY OF OKTIBBEHA COUNTY, MISSISSIPPI.

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DESCRIPTION OF THE AREA.

Oktibbeha County is situated in the eastern part of the State of Mississippi. It is included between the parallels 33° 15′ and 33° 35′ north latitude and the meridians 88° 30′ and 89° west longitude. On the north it is bounded by the counties of Clay and Webster; on the east by Webster and Lowndes; on the south by Noxubee and Win-

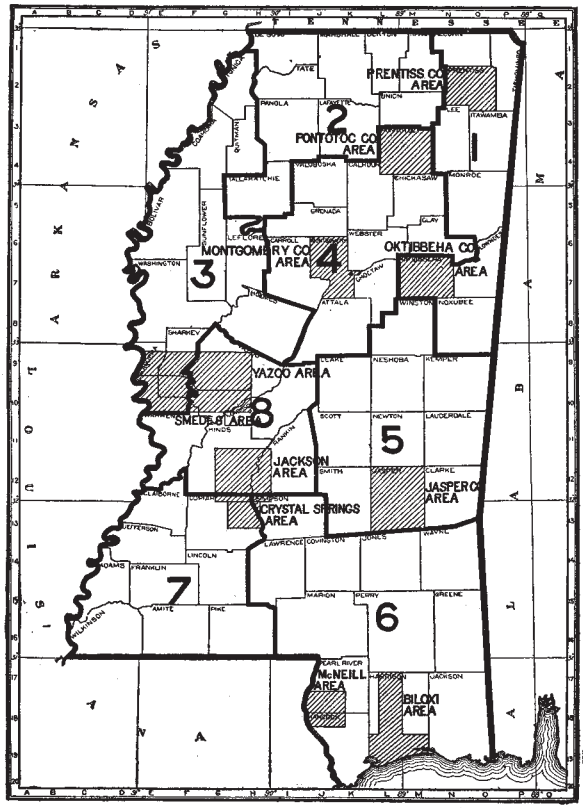

FIG. 15.—Sketch map showing location of the Oktibbeha County area, Mississippi.

ston, and on the west by Choctaw and Webster. The county is in the shape of a rectangle 19 miles north and south by 24 miles east and west, including twelve full Congressional townships and the lower tier of sections of the four townships on the north. The third

standard parallel north forms the southern boundary of the county. The total area of the county is 285,568 acres, or about 446 square miles.

The county is crossed by three physical divisions differing in topography and soils. In general they follow geological boundaries. The eastern third of the county is in the limestone or chalk belt. Streams are numerous and the surface features range from moderately rolling to hilly. The streams have bottoms from a few rods to more than a mile wide, depending, of course, upon the size of the streams. A peculiar feature about the topography, which is also developed to a less extent farther west, is that the stream bottoms are bordered on the south by high broken bluffs and rolling areas, and on the north side by comparatively level lands not much above the bottoms. The broken areas soon give way to high rolling lands which slope and become more level gradually toward the next stream course on the south.

Along the western edge of the county is a strip of high hill lands sometimes referred to as the "red hill section." These hill lands, for the most part, represent the eastern extension of the drainage divide between streams flowing east into the Tombigbee River and those flowing west into the Pearl River. The nine sections in the southwestern corner of the county range from hilly to broken, with local differences in elevation of 100 to 200 feet.

Between the two belts described above is a broad area known locally as the "flatwoods." The surface features throughout this region range from level to gently rolling, except in the broken strips bordering the streams on the south. Small lateral streams here are much less numerous than in the chalk belt or in the high hill lands.

The county has an extensive system of drainage which is very largely to the east across the different geological formations. A narrow strip along the western edge extending 8 miles south from Maben drains to the west. Noxubee River, the largest stream, flows along the southern edge of the county. Its principal tributaries in the county are Sand, Cypress, Talking Warrior, Hollis, Shaw, Browning, and Rocky Bottom creeks. These drain a strip from 6 to 10 miles wide. The central-eastern part of the county drains to the east through Catalpa, Sand, Ash, Ittobechi, Okahatta, and Red Bud creeks. Line Creek, the next largest stream, comes into the county for a short distance near the northeastern corner. The northwestern part of the county is drained by Trim Cane Creek and its tributaries, Sun, Biba Wila, Lick, and Self creeks and a few other smaller streams. Trim Cane Creek, which flows almost centrally halfway across the county, turns to the northeast and passes out of the county about 7 miles from the northeastern corner. All of the streams except Line Creek and Noxubee River dry up occasionally. Oktoc Creek

is what was the Noxubee River before the connection was established across to the bed of Cypress Creek.

The Government surveys were made in the years 1832, 1833, and 1834. Oktibbeha County was organized in 1833 and the court-house was established at Starkville in 1834. Some settlements were made in the county before the beginning of the Government survey. The settlers came largely from North Carolina, South Carolina, and Virginia. The sandy lands in the western part of the county were settled by white people in very moderate circumstances. They never owned any slaves and have always farmed on a limited scale. The flatwoods belt has always been sparsely settled, except in a few neighborhoods. Within the last few years more people have begun farming in this belt. In the eastern half of the county a different order of things has prevailed from the early settlement. The land has been held and farmed in large plantations. The landlords' homes were good, substantial buildings. Since the civil war the white people have gradually moved away from the farms, and many of the old homes have gone to ruin. A great deal of the land is now tenanted by negroes. Large tracts have been thrown out of cultivation and allowed to grow up in pine or else to be ruined by erosion.

Starkville, with a population of about 2,000, is the largest town. It is 4 miles northeast of the center of the county. Maben, in the extreme northwestern corner, has a population of about 800, and Sturgis, near the southwestern corner, has a population of about 300. The smaller towns and railroad stations are Longview, Bradley, Sessums, Osborn, and Muldrow. The Agricultural and Mechanical College of Mississippi is 1½ miles east of Starkville.

Oktibbeha County is passed on three sides by as many main lines of railroad at a distance of 1 to 3 miles beyond its borders. The Mobile and Ohio Railroad parallels the eastern boundary; the Southern Railway the northern boundary; and the Mobile, Jackson and Kansas City Railroad the western boundary. The Southern comes into the county for a short distance at Maben. The Aberdeen branch of the Illinois Central Railroad traverses the county almost centrally in a general northeast and southwest direction. A branch line of the Mobile and Ohio enters the county from the east, terminating at Starkville. All of these railroads give the county fairly good shipping facilities. They occur in such way, however, as to lead a great deal of the local business outside of the county.

Some of the main public roads are almost impassable during wet weather and especially during the winter months. A great deal could be done to improve these roads at small expense.

The bulk of the cotton crop is marketed at Starkville and other local points. At Starkville is a cotton factory, a cotton-seed oil mill, and a large warehouse for storing cotton.

CLIMATE.

The climatic conditions of Oktibbeha County are quite similar to those over a large portion of the cotton-growing States. The summers are long and warm enough to allow the successful growth of a variety of crops. The winters are mild, except for occasional cold snaps of relatively short duration.

The following tables were compiled from records of weather bureau stations at Columbus and Louisville, both of which are in adjoining counties.

Normal monthly and annual temperature and precipitation.

Month.	Columbus.		Louisville.		Month.	Columbus.		Louisville.	
	Temperature.	Precipitation.	Temperature.	Precipitation.		Temperature.	Precipitation.	Temperature.	Precipitation.
	°F.	In.	°F.	In.		°F.	In.	°F.	In.
January	44.2	4.77	45.1	5.68	August	81.9	4.39	79.4	4.68
February	44.6	5.00	47.9	5.12	September	76.1	2.55	74.4	2.58
March	53.8	7.00	55.1	6.16	October	63.9	2.06	64.0	1.83
April	62.2	4.77	62.9	4.24	November	53.7	3.17	53.9	3.05
May	72.8	3.16	70.5	3.12	December	46.6	4.87	47.4	4.63
June	81.3	4.76	77.0	4.39	Year	63.7	52.10	63.1	50.49
July	83.2	5.60	79.7	5.01					

Dates of first and last killing frosts.

Year.	Columbus.		Louisville.	
	Last in spring.	First in fall.	Last in spring.	First in fall.
1898	Apr. 7	Oct. 27	Apr. 7	Oct. 23
1899	----------	Nov. 4	Apr. 10	Nov. 3
1900	Apr. 1	Nov. 9	Apr. 1	Nov. 10
1901	----------	Nov. 6	Mar. 21	Nov. 13
1902	----------	Oct. 28	----------	Oct. 29
1903	----------	Oct. 25	Mar. 25	Oct. 25
1904	Mar. 29	Oct. 23	Mar. 28	Oct. 23
Average	Apr. 2	Oct. 31	Mar. 31	Oct. 31

It will be observed from these tables that the annual precipitation is slightly over 50 inches. This is fairly well distributed through the growing season, the drier weather of the autumn months being favorable for gathering crops. The heaviest rainfall is in March. For Louisville the average dates of the last killing frost in spring and the first in fall are given as March 31 and October 31, respectively. Occasionally frost occurs late enough in the spring to injure tender crops.

AGRICULTURE.

The agricultural development of Oktibbeha County has been mainly along the lines common over a large portion of the cotton-growing

States. The soils and climatic conditions are very favorable to a wide variety of agricultural interests, but since the early settlement of the area there has been an increasing disposition to grow cotton as the chief money crop. Especially has this been noticeable since the civil war. The farmers turned their attention to such crops as would command a ready market and a good price. Cotton proved most attractive for this purpose. As the acreage of cotton was gradually increased less attention was given to the many necessaries for home consumption, including corn, oats, forage, pork, beef, potatoes, etc. This system of farming is now followed by a majority of the landowners as well as by the tenants.

Before the civil war there were two general systems of farming in the county. The limestone belt, comprising roughly the eastern third of the county, was held in large estates, which were farmed with slave labor. These old slave plantations were well kept, and their owners usually were very prosperous. Through the sparsely settled flatwoods belt and on the sandy lands in the western part of the county the farms generally were not so large, and most of them were operated by the owners. The effect of the war on labor conditions here is less noticeable than in the eastern part of the county, as most of the farming element consists of white people, and only a few of the farms are tenanted. The farmer and his family do most of the work. Through the limestone belt, on the other hand, the bulk of the land, while still held by whites, is tenanted by negroes, in tracts ranging from 20 to 90 acres. This system of tenanting has led most of the white planters to move to the towns and cities.

The agricultural conditions in the county have improved a great deal within the last ten years. Farmers who have been purchasing their supplies on a lien every year and living under mortgages are now out of debt and many of them have at least a small bank account. There are also evidences that they are improving their home surroundings. In the western part of the county some of the houses have been enlarged recently, and there are some new houses. To make much further headway in improving the agricultural conditions it will be necessary for the landowners to realize the importance of improving the methods of tillage and cultivation. Lands once allowed to run down and be ruined by erosion are approaching very closely a state of worthlessness. The tenants generally pay their rents and liens for supplies with cotton, but it would be a wise plan to encourage them to grow a running supply of corn and other things they can produce cheaply for home use, and above all to encourage them to practice better cultural methods so as to keep the soil in a state of higher productiveness. Immediate returns may be attractive, but there is little profit in the long run in renting lands if they are to be farmed in such a way that their intrinsic value constantly diminishes. Care-

less methods are very largely responsible for the many raw clay hills through the eastern end of the county, which, though once very productive lands, are now of little agricultural value.

Cotton is the all-important crop, and no doubt it will continue to be so for many years to come. However, there is a growing opinion that the salvation of the section lies in diversified farming. A few farmers in the limestone belt have begun producing hay for market, and are finding it very profitable. The grasses chiefly grown for this purpose are Bermuda and Johnson grass. The farmers, as a rule, are prejudiced against these grasses because they often prove very serious pests in the cotton and corn land through the limestone belt. At the time of the survey a few areas were in alfalfa, which was doing well. This is one of the promising crops for the dark-brown and black calcareous upland clays, as well as on the well-drained bottom lands, and it will receive much more attention in the future. A few of the farmers through this section have profitable dairy herds. Not a great number of beef cattle are marketed, and they are mostly of nondescript breed picked up here and there among the farmers. There seems to be no reason why stock raising should not be extended. Very little has been done in the line of fruit growing, which doubtless would prove profitable on some of the soils of the county. Some peach and plum orchards have recently been set out on the Oktibbeha fine sandy loam and the Oktibbeha clay. The Orangeburg fine sandy loam is one of the best peach soils of the section, but it is not being used at all for this purpose. The orchards for home purposes are usually small.

An idea of the relative importance of the different crops grown can be had from the Twelfth Census, which reports the conditions for the year 1899. According to this authority 36,946 acres were in cotton, producing 13,350 bales; 32,082 acres in corn, producing 587,150 bushels; 1,286 acres in oats, producing 15,590 bushels, and 1,158 acres in grasses for hay, producing 1,165 tons. The crops of lesser importance enumerated were sweet potatoes, sorghum cane, sugar cane, peas, clover, peanuts, and miscellaneous vegetables. The value of the orchard products was placed at $8,229, and of forest products at $46,686. At the present time cross-ties form a very important part of the output of the flat-woods belt and of the sandy hill lands to the west of the flat woods. The value of the farm live stock was given as $618,648. The total value of the products of the farm not fed to live stock was $1,075,212.

It will be seen from the above figures that the average yield of cotton is a little more than one-third of a bale and the average yield of corn about 18 bushels per acre. These averages include all types of soil, but even with the poorer types included it is safe to say that the yields of these, the most important crops of the area, could be

doubled by more thorough methods of tillage and cultivation. A great deal more could be accomplished simply by substituting larger plows and other modern machinery for the light one-horse plows now in general use.

In preparing land for cotton, where cotton follows cotton, as it very often does, a common practice is to run a center furrow in the middle of the old rows, then bed over this with a light turning plow, throwing one or two furrows from each side. This puts the land in shape for planting. Very few break their land broadcast, and where this is done the plowing usually is not more than 2 or 3 inches deep. The planting is done with different styles of cotton planters, most of which drill the seed instead of dropping a certain number of seeds at desired intervals. Most of the planting is done on ridges or beds. The rows are from 3½ to 4 feet apart. If the cotton gets very grassy before it is large enough to thin, a great many "bar off" the rows and leave them that way until the thinning is done. This leaves a narrower strip to be hoed, but the practice is hardly a commendable one under any circumstances. The thinning is followed by a cultivation with a small sweep running close up to the cotton on each side. The after cultivation is done mostly with sweeps which require passing three times in a single row to complete one cultivation. The crop is laid by some time in July, before the bolls have started to mature. An occasional shallow furrow or two through the middle would prove very beneficial during dry seasons up to the time the cotton begins to open. As it is, the crop very often suffers unduly for moisture, and many of the squares fall off that otherwise would develop into productive bolls. A better plan of planting cotton is to break the land broadcast to a depth of 6 or 8 inches, harrow it to a good tilth, then plant the cotton on the level. It is easier to cultivate and to keep down grasses and weeds under this plan than where ridge cultivation is practiced.

The corn crop is planted in a number of ways. In the bottoms it is generally planted on beds so as to give all the drainage possible. More thorough preparation and more frequent cultivation are changes to be suggested. The practice of pulling the fodder is generally followed.

Only a few of the broader soil adaptations are recognized, and these are followed in an irregular way. Although cotton is grown on every type of soil in the county, there is a tendency to confine the corn crop to the better spots of uplands and to the fertile alluvial bottoms. The occasional overflows do not injure corn nearly so badly as they do cotton. And, too, alluvial lands make a fairly good crop of corn most every year.

Very little attention is given to the rotation of crops. This is of prime importance in keeping the soils in a productive state and will

naturally follow diversification. Cotton may follow cotton for a number of years. This practice is one of the causes for declining yields on the once very productive upland areas. Especially is this true in the case of the Oktibbeha fine sandy loam, which, when brought under cultivation, produces good crops of cotton, corn, oats, and grasses. Very few farmers grow cowpeas as a means of improving the soil. Clover does not do well beyond the limestone belt, but cowpeas will make a good growth on any of the soils that are properly drained.

No commercial fertilizers are used, except on some of the sandy lands in the western part of the county. The census reports cited above gave $990 as the amount paid out for fertilizers in the year 1899. In the use of commercial fertilizers, which on some of the thinner soils, no doubt, would prove profitable, it would be well for the farmers to get the Mississippi agricultural experiment station to make some tests to determine just what fertilizers are required and what amounts could best be used.

There is a general scarcity of satisfactory labor in the area. The majority of the negroes would rather rent a small farm than work for wages. Day laborers are usually paid from 50 to 75 cents, and as much as $1 a day is paid for some kinds of work. Regular help costs from $10 to $12 a month, with board or rations. Cotton is picked at so much per hundred pounds. In the year 1899 a total expenditure of $35,550 was paid for labor in the county.

The census of 1900 reports 207,895 acres in farms in the county, a little more than half of which is improved. The average size of the farms is given as 65.7 acres, but each tenancy, containing from 20 to 75 acres, was enumerated as a farm, and thus the size of individual holdings is much greater than the figures reported. There are some holdings of more than 1,000 acres. About 30 per cent of the farms are operated by the owners.

The chief system of tenancy is to rent from 20 to 30 acres of land for each mule or horse worked by the tenant. The tenant furnishes everything but the land and the house. The price ranges from $75 to $100, to be paid when the crop is gathered. The few that rent on a cash basis pay from $3 to $5 an acre. Nearly all of the tenants carry a lien with the merchants or their landowners for supplies to run them through the spring and summer months.

The land values in the county are still comparatively low. The uplands range in price from $10 to $50 an acre and the drained alluvial lands from $25 to $50 an acre. As much as $75 an acre is asked for particularly desirable areas.

As already stated, the great diversity of soils in the county offers an opportunity for a wide range of agricultural interests. The limestone belt could be developed into a first-class dairying section. Another

profitable industry would be the raising of hogs, mules, and horses. The poorer upland here could be used for grazing purposes and the better lands for corn, hay, and other forage crops. The Orangeburg fine sandy loam is a good peach soil, and probably a good tobacco soil. The Norfolk fine sandy loam is a good early truck soil. All of the bottom lands when properly drained will give heavy yields of corn and much of them will produce heavy yields of alfalfa and Bermuda grass. Johnson grass will grow well on any of the productive soils, but it is a serious pest in all of the cultivated land throughout the limestone belt. The Houston clay has proven an excellent alfalfa soil.

In addition to cotton, every farmer should raise a running supply of corn and forage, as well as a number of necessary articles for the table. The plan should be to grow everything needed at home and then produce as much cotton as can be properly handled.

The value of deeper plowing and more thorough cultivation of the crops can not be too strongly urged. Cotton can not make its best development where the roots are confined mainly to a zone 2 to 4 inches deep. A shallow soil does not absorb much of the rainfall unless the subsoil is sandy, and what it does absorb is lost rapidly by evaporation. Shallow plowing also facilitates erosion. Deeper plowing and the practice of a systematic rotation of crops, which will keep up the humus content of the soil, will do much to obviate these circumstances, and where these changes in methods are followed a marked increase in crop production may be expected.

SOILS.

The soils of Oktibbeha County are derived from four geological formations, with a few local modifications from a fifth. The oldest of these formations is the Selma chalk of the Cretaceous period. It appears at the surface in a number of rolling areas and as eroded chalk strips all through the eastern part of the county. A few local areas of the Ripley formation, which is also of the Cretaceous period, are found in this section of the county immediately overlying the Selma chalk. It outcrops very locally.

Beginning just west of Starkville and extending west beyond the limits of the county is a stratum of heavy joint or shaly clay containing considerable lignite. This formation, known as the Lignitic clay, belongs to the Eocene epoch of the Cenozoic era. It forms the surface over a large part of the flatwoods, and the other areas through this belt are underlain by it at a depth of 3 to 6 feet. In the highlands along the western edge of the county it is buried by the Lafayette formation, and this in turn is covered over in places by the Yellow Loam formation. The Lafayette also occurs in the eastern part of the county as remnants on many of the ridges.

A typical section of the Lafayette shows several feet of sandy clay, which usually has a strong red color, underlain by a heavy clay. Over a number of areas only the heavy clay has been left to form the soil. This formation belongs to the Pliocene epoch of the Cenozoic era.

The newest formation is the Yellow Loam of Pleistocene time, which once covered all of the older formations in a layer from 5 to 20 feet deep. Over the Selma chalk it consists of a sandy clay very much mottled in the lower depths. In the flatwoods belt it is more silty and loesslike, and in the region of high sandy lands it ranges from sandy to silty, the predominating color everywhere being a yellow or yellowish brown.

Of the uplands the Selma chalk gives rise to the Houston clay and the chalky eroded areas mapped as the Houston chalk; the Lignitic clay to the Lufkin clay and a few local spots of the Susquehanna clay, and the Lafayette formation to the Orangeburg and Norfolk fine sandy loams and the Orangeburg clay. The heavy clay layer underlying the Lafayette, referred to above, gives the Susquehanna clay in the eastern part of the county and the Susquehanna silt loam and a few local areas of the Susquehanna clay in the western part. The Yellow Loam formation gives different soils in different parts of the county. In the limestone belt its typical soil is the Oktibbeha fine sandy loam, the Oktibbeha clay being mostly an erosion type from the fine sandy loam. Local sandy areas were mapped as the Norfolk fine sandy loam. In the flatwoods it gives the Oktibbeha silt loam, most of the Oktibbeha clay loam, and probably the Lufkin silt loam. A few of the chalky areas have been modified by the Ripley marls.

The alluvial soils through the limestone belt vary in texture from a fine sandy loam to a clay, all of which have been influenced by the Selma chalk. The small bottoms, varying from sandy to silty, were mapped as the Ocklocknee loam, the next heavier type as the Catalpa silt loam, and the heavy black clay areas as the Wabash clay. The bottoms through the Lignitic clay belt consist mostly of a loamy clay, which was mapped as the Ocklocknee clay. The influence of the Lignitic clay on this type is easily seen in its color and texture. In the bottoms of Noxubee River and the larger bottoms of Sand and Cypress creeks are a gray loam and a gray clay. These were mapped as the Waverly loam and the Waverly clay, respectively. They represent purely alluvial material brought down from the sandy lands without any influences from the Selma chalk and very little from the Lignitic clay. Along the western edge of the county the small streams, heading in the Susquehanna silt loam and the Orangeburg fine sandy loam areas, have narrow bottoms varying from sandy to silty in texture. Although not influenced by the Selma chalk, they

were grouped with the Ocklocknee loam, the two phases having about the same crop value and adaptabilities. The bottom lands are extensive and play an important part in the agricultural interests of the section.[a]

The following table gives the names and areas of the several soil types shown in the accompanying map:

Areas of different soils.

Soil.	Acres.	Per cent.	Soil.	Acres.	Per cent.
Lufkin clay	38,464	13.5	Lufkin silt loam	8,704	3.0
Ocklocknee clay	32,512	11.4	Oktibbeha clay	8,576	3.0
Norfolk fine sandy loam	24,832	8.7	Houston chalk	8,064	2.8
Ocklocknee loam	22,784	8.0	Wabash clay	7,616	2.7
Susquehanna clay	18,880	6.6	Waverly clay	7,360	2.6
Oktibbeha fine sandy loam	17,344	6.2	Myatt fine sandy loam	6,144	2.1
Oktibbeha clay loam	15,360	5.3	Catalpa silt loam	5,056	1.8
Orangeburg fine sandy loam	14,784	5.2	Myatt clay loam	4,096	1.4
Oktibbeha silt loam	13,824	4.9	Orangeburg clay	1,856	.6
Houston clay	10,368	3.6	Total	285,568	
Susquehanna silt loam	9,984	3.5			
Waverly loam	8,960	3.1			

OKTIBBEHA FINE SANDY LOAM.

In its most extensive development the Oktibbeha fine sandy loam consists of 5 to 10 inches of a brownish-gray to light-brown fine sandy loam, grading directly into a rather heavy yellowish-brown sandy clay. The subsoil is not much mottled in the first 2 or 3 feet, but below this it becomes very much so, yellow, gray, and brown colors being intermingled. The soil, in the virgin state, contains enough humus to make it dark and mellow. After having been under cultivation, however, it becomes much lighter colored and develops close, compact structure.

Numerous local variations occur in the type as a result of erosion and different drainage conditions. The subsoil clay is exposed in a number of spots in nearly every field, and some of the higher knolls and ridges have a reddish-brown color. On some of the slopes and about the heads of many of the small streams the Selma chalk is near or at the surface, the result being soils varying in color and texture from the black Houston clay to a fine sandy loam of the same texture as described above. Even the sandier soils, where they have been influenced by the Selma chalk, are dark colored. Another variation occurs along some of the lower slopes where there is con-

[a] For a fuller discussion of the geology of the county see Report 1, of the Geological and Industrial Survey of Mississippi, entitled "Geology of Oktibbeha County."

siderable seepage. The soil here, to a depth of 6 to 12 inches, is a gray to dark gray fine sandy loam, containing a noticeable amount of small iron concretions. The subsoil is a gray mottled sandy clay. Larger areas of this character were mapped as the Myatt fine sandy loam. Here and there are also local spots of the same character as the Norfolk fine sandy loam.

This type is derived from a sandy clay known geologically as the Yellow Loam formation. All areas are rolling, and except for local seepage are well drained. The type occurs almost entirely in the eastern third of the county, where the Yellow Loam overlies the Selma chalk. A few small areas were mapped in the northwestern corner of the county.

The original growth consists of oak, hickory, maple, and a few other hardwood trees, oak being the most plentiful.

The area of this type is growing less every year. Under the prevailing methods of tillage much of the surface soil is being washed down into the depressions; hence over what was once good productive fine sandy loam there are now gullied fields and clay hills. A large percentage of the type is under cultivation, though some cleared areas are lying idle. When first cleared it produces heavy yields of cotton, corn, oats, and other crops, but in the older cultivated areas it has been reduced in productiveness to a state where the yields are no longer very satisfactory. Except here and there no commercial fertilizers are used and no efforts are being made to keep the soil in a productive state.

Cotton and corn are the only crops grown to any extent. Cotton yields from one-fourth to one-half bale and corn from 10 to 20 bushels per acre. With more attention to the rotation of crops and tillage much better yields could be obtained. It is not a hard soil to improve. In the line of fruits, peaches, pears, and plums do well.

The following table gives the results of mechanical analyses of samples of the soil and subsoil of this type:

Mechanical analyses of Oktibbeha fine sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
16914	Soil	0.4	5.7	4.9	24.8	17.4	33.7	12.7
16915	Subsoil	.3	3.5	2.5	11.9	8.5	39.3	34.0

OKTIBBEHA CLAY.

The Oktibbeha clay consists of a yellowish-brown heavy sandy clay with a depth of 3 or more feet. As in case of the subsoil of the Oktibbeha fine sandy loam, the material becomes mottled as the depth increases, the color being uniform near the surface. Some areas

still have a veneering of the original fine sandy loam covering, while others consist of a raw clay from the immediate surface. Not having much soil to hold water until it can be absorbed by the clay, most of the rainfall flows off the surface. As a result the processes of erosion are increased and the clay remains comparatively dry through a period of wet weather. What moisture is absorbed is lost by capillarity, on account of the compact, homogeneous character of the clay throughout the profile. Crops may actually suffer for water a few days after a rain.

Some of the crests of the ridges where drainage is best have a reddish-brown color. From this there is a gradation in color to a dark dingy brown on some of the slopes, where the Selma chalk comes near the surface. There are also some differences in the texture of the clay. Here and there through the type are local spots of the Susquehanna clay and more rarely spots of the Orangeburg clay. Bordering Susquehanna clay, Houston chalk, and Houston clay areas are often spots and narrow strips of a yellowish-brown heavy clay of about the same consistency as the Susquehanna clay. After long exposure these areas become red. All of the variations of the type may be expected in very local areas.

The Oktibbeha clay is almost entirely the result of erosion in areas that were originally the Oktibbeha fine sandy loam. Its topography is rolling to hilly, and most of the hillsides are badly gullied. It does not occur west of the Selma chalk belt.

As may be inferred, most of the type is or has been cleared. Only a small acreage, however, is under cultivation. The remainder is either pastured or left to grow up in scrub pine, oak, wild plum, etc. The original timber growth was the same as on the Oktibbeha fine sandy loam.

Cotton is the principal crop. The yields are lighter than on the Oktibbeha fine sandy loam. Corn and all other crops of the area give light and uncertain yields. When thrown out of cultivation, grasses, clover, and melilotus do not take to this clay as they naturally would be expected to do. They make a scattering, irregular growth. This condition probably is due to poor moisture conditions rather than to any lack of nourishment in the clay. By plowing deeply and thoroughly and planting to cowpeas or a similar crop for a few years a fairly loamy soil could be built up. Then it would support a good sod of Bermuda grass and be valuable for pasture. When once improved it will also grow good apples and plums, as well as a number of other crops. Its improvement is looked upon by all of the farmers as a difficult problem, for which reason they do not attach much value to the type as a cultivable soil.

OKTIBBEHA SILT LOAM.

The Oktibbeha silt loam consists of 7 to 10 inches of rather sandy yellowish-gray silt loam, underlain by a yellow mottled friable silty clay to a depth of 3 or more feet. Below this the color becomes more a gray mottled with yellow, but the texture remains about the same to a depth of 6 to 8 feet, where a heavy clay is generally encountered. A few very level and slightly depressed areas that were mapped as this type have a gray soil and a gray mottled subsoil, both showing the lack of drainage. The soil in general is deficient in humus and has the appearance of being acid. When under cultivation it clods worse than would be expected of a soil of its soft, friable character.

This soil is derived from a silty phase of the Yellow Loam formation. With the exception of a few small areas in the highlands south of Maben, it forms a part of the flatwoods belt proper. The flatwoods areas are all underlain by the Lignitic clay and the highland areas by a heavy clay that gives rise to the Susquehanna soils where exposed. Two areas were mapped to the southwest of Starkville, between Rabbit Dance and Talking Warrior creeks. The largest body of the type lies to the east and south of Bells. The next largest extends along the Starkville and Maben road, about 8 miles west, beginning at Trim Cane Swamp. Smaller areas occur on the several drainage divides north of Trim Cane Creek.

The surface features of these areas range from level to gently rolling, there being very few drainage ways. The level areas have no surface drainage, and the underdrainage is hindered by the impervious layer of lignitic clay underlying them. This layer of clay also keeps the slopes soggy and wet during and for some time after rainy seasons. On the lower slopes, although gentle, there is considerable seepage.

The timber growth consists of pine, scattering post oak of large size, and a smaller growth of post oak, red oak, and sweet gum. On the wetter areas water-loving oaks are more in evidence.

Under existing conditions this is one of the poorer soils of the county and has never been cultivated to any extent. The few small areas farmed here and there produce light yields of cotton and corn, the two principal crops. No manure or fertilizers are used, and artificial drainage has not been attempted.

Tiling would prove the most effectual way of draining these lands, but open ditches in the depressions and through the flat areas and a few on the slopes to cut off seepage would be of great benefit. Throughout the growing season this can not be regarded as a wet soil, but the trouble is that it stays wet too long after rains. The crops under such conditions will develop a shallow root system and later in the season may actually suffer for water, or if they do develop a deep, extensive root system during a prolonged favorable

season, the roots may later be drowned, the result being an almost or complete failure of the crop. After good drainage has been established cowpeas should be grown extensively to increase the humus content of the soil, and lime should be applied to check any acidity and to increase the power of the soil to hold humus. Coarse manures would prove very helpful, and such lime as is needed could be gotten from the chalk beds of the area. By following this plan good crops can be grown on this soil as cheaply as on any of the light-textured upland soils of the section, for the level surface will permit the use of all kinds of labor-saving machinery. Cotton, corn, and oats ought to succeed, as well as lespedeza and some of the grasses. What the type needs to become valuable land is mainly drainage and more humus.

The following table gives the results of mechanical analyses of the Oktibbeha silt loam:

Mechanical analyses of Oktibbeha silt loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
16908	Soil	0.1	1.5	2.3	15.0	2.0	69.1	9.1
16909	Subsoil	.2	1.3	1.9	12.8	5.8	64.5	13.3

OKTIBBEHA CLAY LOAM.

The soil of the Oktibbeha clay loam, from 4 to 6 inches, is a dark-brown friable fine loam or heavy silt loam, containing in most areas a fairly good supply of humus. Cultivated areas generally have a heavier soil than the uncultivated areas, because a small quantity of the underlying clay is plowed up in the breaking and preparation of the land for planting. Under cultivation it is not a hard soil to keep in good tilth. The subsoil is a yellowish-brown silty clay, without much mottling, to a depth of 2½ to 3 feet. Lower down it becomes lighter colored and gives way to the heavy Lignitic clay. The clay subsoil is somewhat heavier and less friable than that of the Oktibbeha silt loam, but it is much more friable and pervious to water than the subsoil of the Lufkin clay.

The Oktibbeha clay loam is confined to the flatwoods or Lignitic clay belt. The largest areas occur in the western tiers of townships about the headwaters of Biba Wila and Lick creeks and of some of the tributaries of Big and Cypress creeks. A number of areas occur farther east. The area just west of Starkville and the one bordering Josey Creek on the west, principally in sections 30 and 31, represent a modification of the type. The soil contains an appreciable amount of fine sand and the subsoil is redder than in the typical areas. Another area of this character borders Hollis Creek on the west.

The type is derived from a thin layer of silty clay immediately overlying the heavy Lignitic clay and probably representing remnants of a heavy phase of the Yellow Loam formation left in the processes of erosion. Some areas seem to be derived from lighter phases of the Lignitic clay formation. The surface features of this soil are rolling enough to allow good drainage, and some of the slopes need to be protected from erosion.

The timbered areas support a thrifty growth of oak, scattering hickory, and pine.

Along with the Oktibbeha silt loam and the Lufkin clay, the Oktibbeha clay loam for a long time was not developed to any extent. Within recent years, however, its value has become more generally recognized, and at the present time over half of the type is under cultivation. Cotton is the chief crop, corn being confined largely to the bottom lands. Oats are grown in a limited way for home use. Cotton yields from one-half to three-fourths bale, corn 20 to 30 bushels, and oats 30 to 50 bushels per acre.

No fertilizers are used. Good wheat crops could be grown on this soil, as well as grasses and other forage crops. It is one of the best upland cotton soils in the county. With good treatment a bale to the acre could be made. All kinds of improved machinery could be used to advantage on most areas.

The following table gives the results of mechanical analyses of the soil and subsoil:

Mechanical analyses of Oktibbeha clay loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
16910	Soil	1.0	4.3	3.7	18.1	6.7	50.5	15.0
16911	Subsoil	.3	2.1	1.9	8.9	3.4	45.2	37.9

ORANGEBURG FINE SANDY LOAM.

The surface 4 to 15 inches of the Orangeburg fine sandy loam is a gray to brownish fine sandy loam, containing a rather high percentage of silt. This grades rapidly into a red friable sandy clay, which usually extends to a depth of 10 or more feet. On some of the knolls the surface is strewn with small ironstone fragments. These occur to a less extent through the soil and subsoil. The soil proper is from 3 to 5 inches deep, and in most places it does not contain much organic matter.

The Orangeburg fine sandy loam occurs mostly along the western edge of the county, but small areas were also mapped in the eastern half. Most of the Thomson Hills east of Rocky Hill Church is of this type. The surface features range from rolling to hilly and

broken. The Thomson Hills and the area south of Sturgis are very hilly, having local differences in elevation of 100 to 200 feet. Some of the slopes are too steep to be cultivated successfully.

The Orangeburg fine sandy loam is derived from the Lafayette formation, but has been modified to some extent by the material of the Yellow Loam formation. On the slopes local variations occur as a result of exposures of the Selma chalk, the Lignitic clay, and a heavy red clay. These differences occur locally and very irregularly.

The Thomson Hills and the other few areas mapped in the eastern third of the county were originally forested with oak as the principal growth. In the western end of the county the same type supports a mixed growth of oak and pine, both being scrubby in places. Pine is more in evidence on the sandier areas.

Only a small portion of this type is under cultivation. Cotton, the chief crop, does not yield more than one-half bale per acre, except where commercial fertilizers and rough manures are used. The corn yields, too, are light. People farming this soil grow most of their corn on the bottom lands. Commercial fertilizers are used by most of the farmers. With improved methods of farming much better yields should be obtained. Peaches would do well and probably tobacco.

The following table gives the average results of mechanical analyses of the soil and subsoil of this type:

Mechanical analyses of Orangeburg fine sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
16918,16920	Soil	0.0	1.8	4.7	22.1	12.3	51.0	8.0
16919,16921	Subsoil	.1	1.0	3.2	18.9	6.9	39.5	30.1

ORANGEBURG CLAY.

The Orangeburg clay is a red, friable fine sandy clay with little or no mottling in the surface 3 feet. The surface few inches varies from a brownish fine sandy loam to a red clay, as left in the processes of erosion.

This type is very limited in extent, although several small areas were mapped in the eastern third of the county and a few to the north and south of Sturgis. These areas prior to clearing were the Orangeburg fine sandy loam. A few timbered areas were mapped, but these were so rolling that the timber growth did not protect them from erosion.

Most of the areas mapped are so badly eroded as to render them unfit for agricultural use. They afford some pasturage during the summer months. The few better areas produce good crops of cotton,

if the land be properly prepared. Such areas as have been eroded beyond redemption should be allowed to reforest themselves.

The Orangeburg clay holds any improvements well, and it is easier to improve than the Oktibbeha clay or the Susquehanna clay.

The following table gives the results of mechanical analyses of the soil and subsoil of this type:

Mechanical analyses of Orangeburg clay.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
16922	Soil	0.1	0.7	4.4	29.4	8.9	29.7	26.9
16923	Subsoil	.0	.8	16.4	32.8	3.4	13.2	33.8

NORFOLK FINE SANDY LOAM.

The Norfolk fine sandy loam consists of 12 to 24 inches of gray to yellowish-gray fine sandy loam, underlain by a yellowish-brown mottled fine sandy clay. The surface 3 or 4 inches varies from light-gray to gray, depending upon the amount of humus present. The subsoil clay of this type is in most places sandier and more friable than that of the Oktibbeha fine sandy loam.

Many small areas of this type occur in the eastern half of the county. They are found mostly on the north side of the streams, where the uplands are lower and less rolling than farther back. Larger areas are found bordering Noxubee River, Sand Creek, Cypress Creek, and Big Creek bottoms.

The areas to the east of Starkville and of Hollis Creek are derived from the sandiest phase of the Yellow Loam formation. They range from nearly level to moderately rolling. Those to the west of Hollis Creek are derived largely from the Lafayette formation, where the surface features are not nearly so rolling as through the Orangeburg fine sandy loam. All areas are naturally well drained except in local spots.

The timber growth on the areas from the Yellow Loam formation consists of oak and other hardwoods. These areas are considered more productive than those from the Lafayette, which are timbered largely with shortleaf pine. Any differences in the productiveness of the two phases are more marked when the land is new, which is to be expected, as oak leaves a soil in a more productive state than pine.

Much less than half of the type is under cultivation and cotton is the chief crop. For the first few years the yields are fairly good, but after this they are very light, unless rough manure or commercial fertilizers are used. Corn does not yield more than 10 to 15 bushels and cotton generally less than one-half bale per acre.

Wherever the railroad can be reached easily this soil offers the best opportunities in growing early truck. It is the type being used so extensively for this purpose along the South Atlantic and Gulf coasts. To grow cotton profitably it will be necessary to practice some system of rotation, so as to keep the soil well supplied with humus. This also applies to the growing of corn.

The following table gives the average results of mechanical analyses of the soil and subsoil of this type:

Mechanical analyses of Norfolk fine sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
16904,16906	Soil	1.2	4.7	5.7	21.9	4.8	54.3	7.8
16905,16907	Subsoil	.2	3.6	4.0	15.9	3.5	57.0	15.7

MYATT FINE SANDY LOAM.

The surface 6 to 12 inches of the Myatt fine sandy loam consists of a gray fine sandy loam, more or less streaked with dark iron stains. Most areas have a number of small iron concretions strewn over the surface and also occurring to a less extent through the soil and subsoil. Below 12 inches there is a rapid gradation into a light gray mottled sandy clay. Both soil and subsoil have a closer, more dense structure than is found in the better drained upland areas of the same texture. Although low and wet the soil does not contain more than a moderate amount of humus.

The Myatt fine sandy loam is of limited extent. It occurs in a number of small areas associated with the Norfolk fine sandy loam, the two types being derived from the same formation. The Myatt fine sandy loam, however, includes only the level and depressed, poorly drained areas. Narrow strips at the base of the higher uplands generally are kept wet by seepage, especially during the winter and early spring months. The large areas are so level that water will stand on the surface during wet seasons. The areas in the eastern half of the county are timbered with water oak, pin oak, and other water-loving varieties of this family. The areas farther west support a good growth of pine and a smaller undergrowth of oak.

Only a few small areas are under cultivation. Crops often suffer from the lack of proper drainage. Cotton will yield as much as one-half bale per acre, and corn from 10 to 20 bushels. Fair crops of oats could be grown if good drainage were provided. Lespedeza makes a good vigorous growth. The areas near the railroad, if properly drained, would prove valuable for the production of strawberries. Liming will benefit this soil.

The following table gives the results of mechanical analyses of the soil and subsoil of this type:

Mechanical analyses of Myatt fine sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
16928	Soil	1.5	8.0	8.1	25.7	6.9	37.9	12.2
16929	Subsoil	.5	5.2	7.5	19.4	5.6	40.1	22.0

MYATT CLAY LOAM.

The Myatt clay loam, to a depth of 3 to 5 inches, is a brown or brownish-gray silt loam to silty clay loam passing into a light-gray mottled plastic silty clay, which has the appearance of carrying considerable fine sand. The soil under cultivation has a tendency to clod, but with ordinary care it can be reduced to a good tilth.

Only a very small percentage of the area consists of this type. It occurs as low, level areas generally bordering the stream bottoms, and only a few feet above overflow. Parts of these areas bear evidence of once having been a part of the bottoms. A number of small areas are found in the eastern part of the county bordering Sand and Catalpa creeks. The area east of Sessums is a little different from the general run of the type. Being fairly well drained, the soil is brown and the subsoil has somewhat of a yellowish tinge. This area, as well as some of the others along Sand and Catalpa creeks, is timbered with post, red, and Spanish oak, and hickory. The others have a large growth of water, pin and white oak, and hickory, intermixed with scattering pine.

A few areas are cultivated, and except during wet seasons the yields are better than on the lighter uplands. Cotton and corn are about the only crops grown. Oats would do fairly well.

This soil could be made first-class land for a variety of crops if given good drainage, and this can be done at a very reasonable cost.

The following table gives the results of mechanical analyses of the soil and subsoil of this type:

Mechanical analyses of Myatt clay loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
16924	Soil	0.0	0.7	1.8	14.0	2.3	61.4	19.6
16925	Subsoil	.0	.6	1.3	12.0	3.1	57.4	24.9

SUSQUEHANNA SILT LOAM.

The Susquehanna silt loam consists of 5 to 8 inches of brown friable silt loam, underlain by a red mottled heavy clay to a depth of

about 2½ feet, then to greater depths by a gray-colored clay of the same texture, mottled with red. The soil contains a fair amount of humus, works up easily, and does not clod to any extent.

Areas of this type are confined to the highlands along the western edge of the county, where in most places the topography is quite rolling. The natural drainage is perfect.

The Susquehanna silt loam is derived from the heavy clay at the base of the Lafayette formation. Ironstone fragments are found to a limited extent throughout the soil and subsoil. Were this to occur in abundance the type would be very nearly the same as the Susquehanna gravelly loam, as mapped in Montgomery County, Ala., except that the soil here is a little finer and the subsoil in most places redder. The two types occur quite similarly and have essentially the same crop value. The silt loam areas, being less stony, are much easier to cultivate satisfactorily.

A large percentage of the type is under cultivation. It is preferred to the Orangeburg fine sandy loam on the one side and the flatwoods clays on the other side. It produces fairly good crops of corn, cotton, and oats. Bermuda grass would afford good pasturage, but little attention is given to the keeping of live stock. Without the use of fertilizers, cotton, where properly cared for, will produce about one-half bale and corn from 15 to 25 bushels per acre. The yields could be greatly increased by the use of manures and more thorough tillage.

The following table gives the results of mechanical analyses of the Susquehanna silt loam:

Mechanical analyses of Susquehanna silt loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
16936	Soil	1.0	1.5	1.6	11.6	3.3	68.1	12.8
16937	Subsoil	1.4	2.1	1.2	9.0	3.1	42.1	41.1

SUSQUEHANNA CLAY.

The surface 2 to 4 inches of the Susquehanna clay varies in color and texture from a brownish-gray fine sandy loam to a stiff red clay, the differences being largely the result of erosion since the land was cleared. Nearly all areas had a soil from 4 to 8 inches deep, and some of the leveler areas and lower slopes are still somewhat sandy, but the ridges and steeper slopes are little else than a raw clay to the immediate surface. The subsoil, to a depth of about 3 feet, is a bright red to yellowish-brown heavy clay, mottled to some extent with gray colors. The mottling increases with depth, and below 3 feet the color becomes more nearly a gray mottled with red. When

wet the Susquehanna clay is soft and plastic, but when only moist it is so tough and sticky as to make driving over it very difficult. When dry it makes excellent roads.

This is the most extensive type in the eastern tier of townships. It also occurs in a number of small areas a little farther west and in a few small areas among the hill lands along the western border of the county. The areas in the eastern end of the county are underlain by the Selma chalk at various depths below 3 feet. The chalk outcrops in numerous small spots along the worst eroded slopes. Some of these spots are still chalky to the surface, while some others not now subject to much erosion have weathered into the Houston clay. Such of the latter as are large enough have been shown in the accompanying soil map.

The surface features range from gently rolling to hilly. The area east of Oktoc is decidedly rolling. It is cut by many small streams flowing through narrow V-shaped valleys. Parts of the areas around Muldrow, Osborn, Hickory Grove, and Blackjack, and between Red Bud and Catalpa creeks are only moderately rolling and have a grayish-brown to brown fine sandy or silty loam surface soil 3 or 4 inches deep. The more level areas usually have the yellowish-brown subsoil rather than the red, which is more characteristic of the small spots and larger rolling areas.

The Susquehanna clay is derived from a layer of heavy clay immediately overlying the Selma chalk in the eastern end of the county and the Lignitic clay in the western end. A few of the areas associated with the Lignitic clay soils seem to be derived directly from that formation.

The original tree growth consists of Spanish, post, and red oak, hickory and a few other hardwood species. In some sections it has acquired the name "postoak prairie." Old abandoned areas are growing up to scrubby shortleaf pine, post oak, and blackjack oak.

A large percentage of the type was under the plow before the civil war, but much of the area was subsequently thrown out of cultivation and has suffered severe erosion. At the present time less than half of the type is under cultivation, and the crop yields are generally light. Cotton yields from one-fourth to one-half bale and corn from a nominal quantity to 20 bushels per acre. Very frequently among the tenants 4 to 5 acres are required to produce a bale of cotton.

In the older areas, having practically no soil, or at most only a shallow soil deficient in humus, a large part of the rainfall runs off the surface. The result is that the crops suffer unduly for water and at best have only a very shallow zone within which to develop their roots. A heavy clay with a shallow, light-textured surface soil makes a droughty type for shallow-rooted crops, unless deep plowing and subsoiling is practiced. Even the old worn-out areas that can be

plowed and protected from further erosion can be made into a fairly good soil by plowing deeply and growing cowpeas. After a deep soil has been built up in this way, the fields should be seeded down to grasses for pastures. Bermuda grass would prove excellent for this purpose. By pasturing the uplands and using the bottom lands for corn and other necessary grain and forage crops the Susquehanna clay belt can be changed into a first-class dairy farming section. In this light the present system of growing cotton and a little corn does not pay.

The following table gives the results of mechanical analyses of the soil and subsoil of the Susquehanna clay:

Mechanical analyses of Susquehanna clay.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
16932	Soil	0.1	1.1	1.8	12.1	8.6	65.6	11.1
16933	Subsoil	.0	.4	.6	3.6	2.1	46.0	47.0

HOUSTON CLAY.

The Houston clay, or "black prairie," as it is called, to a depth of 9 to 24 inches, is a dark-brown to black loamy clay of a more or less calcareous nature. Some areas are strewn with shells, and all of them have at least a small quantity of lime concretions scattered over the surface and through the soil mass. When wet it is sticky and hard to handle, but when only moist it is sufficiently friable to be easily put in good tilth. Except in local spots, the soil contains an abundance of humus, making it very retentive of moisture. The black clay grades through a few inches into a white or yellowish-white weathered chalk, or into a foot or so of a yellowish highly calcareous clay, and then into chalk. The chalk although weathered considerably still retains some of the original structure of the rock.

This type is derived from exposures of the Selma chalk, which in an unweathered state underlies all areas at various depths below 3 feet. The largest areas occur to the east and south of Osborn in township 19, range 15 east. The next largest area is northwest of Oktoc, along the western edge of township 17, range 15 east. A number of small areas are found all through the eastern third of the county. The larger areas are in general fairly typical of the type as found in the main black prairie belt, but a number of the small areas have a slightly sandy soil, due to a small amount of material left from the Yellow Loam formation which once occupied the entire surface.

As will be seen from the accompanying soil map, the majority of the small areas are at the heads of minor streams and along the slopes.

The surface of these ranges from nearly level to rolling. They are naturally well drained, except for local seepage. The larger areas are gently rolling. Occurring in small areas associated with sandy and red clay lands, this soil was originally timbered with oak, hickory, hawthorn, wild plum, ash, etc.

Nearly all of the Houston clay is under cultivation. Cotton, corn, the grasses, and melilotus make a luxuriant growth. Bermuda grass makes excellent pasturage. A few have tried alfalfa and found that it did exceptionally well when given the proper care. Cotton yields from one-half to 1 bale, corn 20 to 50 bushels, oats 20 to 60 bushels, and hay from one-half ton to 2 tons per acre. A good sod of alfalfa gives about a ton of hay to the cutting.

The Houston clay is a good soil for all kinds of farming except truck and fruit growing. Some areas are still producing good crops after having been under cultivation, and very largely to cotton, for nearly a century. The least productive areas are where the chalk comes near the surface and the soil does not contain a large amount of humus. Such areas should be sown to grass or melilotus.

The type is an exceptionally good one for forage crops, and so offers splendid opportunities for stock raising and dairy farming. Johnson and Bermuda grasses, which are generally considered as pests, would in many instances give better returns than cotton. The possibilities of the type are as yet far from being realized.

HOUSTON CHALK.

The Houston chalk includes exposures of the Selma chalk formation in badly eroded areas, where little or no soil has formed. The surface few inches varies from the bare, partially weathered white chalk to a light-gray or gray chalky loam, depending upon whether erosion is still going on or not. Below this is a white or yellowish-white, partially weathered chalk which usually extends to a depth of 3 or more feet. In some areas the chalk near the surface has weathered to a soft, friable state, while in others it is almost as hard as the blue unweathered rock farther down. Here and there even the blue rock has been exposed. Local spots of the Oktibbeha clay are of common occurrence on nearly all of the ridges and slopes. The areas of Houston chalk in the vicinity of Thomson Hills have been modified in places by sandy marls from the Ripley formation, which occurs in local remnants over the Selma chalk formation. Similar modifications occur elsewhere along the bluff of Trim Cane Creek.

This type occurs as rolling and broken areas about the heads of small streams and along the south bluffs of the larger creeks flowing through the chalk belt. The largest areas extend along Trim Cane and Line Creek bottoms, beginning on the west at Josey Creek. Smaller strips occur similarly along Ash, Sand, and Catalpa creeks. Some areas are pastured, but very few are cultivated, and large

tracts are not used for any purpose. As pasture they are proving valuable, for where there is any soil at all melilotus thrives and the better areas grow good grasses, and lespedeza in addition, all of which are relished by stock. Johnson grass does fairly well where the soil has any depth.

LUFKIN SILT LOAM.

The Lufkin silt loam consists of 6 to 10 inches of gray, or light brownish-gray friable silt loam, underlain by a light gray mottled soft silt clay or heavy silt loam. The subsoil of the slopes and slight ridges may have a yellowish cast on account of better drainage conditions. The soil in timbered areas is usually streaked with dark iron stains, and in general it does not contain much organic matter. Small iron concretions are strewn over the surface and to a less extent through the soil and subsoil. Heavy clay is encountered at a depth of 3 to 6 feet.

This type occurs mainly in the vicinity of Longview. A few small areas were mapped to the north of Trim Cane Creek in sec. 32, T. 20, R. 13 E., secs. 11 and 12, T. 19, R. 12 E., and secs. 15 and 16, T. 19, R. 13 E. The surface is level to gently rolling, the type being more level and the drainage less efficient as a whole than is the case of the Oktibbeha silt loam. The soil also differs from the Oktibbeha silt loam in being finer textured and more heavily timbered with pine and an undergrowth of small oaks.

The Lufkin silt loam is a residual type derived from a very silty material, having a depth of 3 to 6 feet over the heavy Lignitic clay. It is not certain whether this material represents a light silty phase of the Lignitic clay formation or a very silty phase of the Yellow Loam formation. There are some reasons to believe it is the latter, the material being quite loesslike in character.

Very little of the type has ever been cleared. At the time of the survey a few areas were being farmed. Cotton and corn generally give light and uncertain yields. The soil would make excellent land for cotton, corn, and forage crops if good drainage were established. If well drained it would also likely prove a good tomato soil. Liming would prove beneficial, and cowpeas and the like should be grown extensively to add humus and nitrogen to the soil.

The following table gives the results of mechanical analyses of the soil and subsoil of this type:

Mechanical analyses of Lufkin silt loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
16900	Soil	2.0	2.4	1.4	4.6	1.1	76.3	12.6
16901	Subsoil	.0	.4	.3	1.2	1.1	50.8	45.4

LUFKIN CLAY.

The Lufkin clay, as developed in the larger level and gently rolling areas, has a dark-brown soil, 3 to 5 inches deep, consisting of a heavy silt loam to a silty clay loam. This gives way directly to a light gray mottled heavy and tough plastic clay, changing to a light steel-gray at a depth of 2 to 3 feet. The mottling of the subsoil is with yellow and yellowish-brown. The soil clods where plowed and has a tendency to remain somewhat cloddy throughout the growing season.

The rolling and broken areas, generally bordering the stream bottoms on the south, have very little soil, and this is generally a dark-brown clay loam. The subsoil here is a very heavy tough clay, streaked and mottled to a considerable extent with reddish-brown and red iron stains. Where this clay is exposed in the road it has a peculiar brownish cast.

The Lufkin clay is the main flatwoods type, being more extensive than any other soil in the county. It occurs mostly in level and gently rolling areas, and to a less extent in rolling and broken strips bordering nearly all of the stream courses through the flatwoods belt on the south. The area just west of Starkville and extending about 7 miles south and as far west as Seitz's store has a very waxy, puttylike subsoil. This area may be considered as typical. The timber growth here consists largely of oak. All of the slopes bordering the bottoms, too, are heavy, but the level areas in the western half of the county for the most part have a deeper silty soil and the subsoil is not so tough. They are timbered with a mixed growth of pine and oak, which is inclined to be scrubby. Having such a heavy subsoil, practically all of the drainage is from the surface. For this reason the level areas are very poorly drained.

The Lufkin clay is derived from the Lignitic clay formation, where all of the later formations have been eroded away. The roads are almost impassable during the wet winter months, and just after rains during summer. When dry, however, they are as hard as a pavement.

Less than 10 per cent of the Lufkin clay is under cultivation, and the cultivated areas are confined largely to the slopes, where there is enough fall for the surplus waters to run off. Some of these areas produce as much as one-half bale of cotton and 15 to 25 bushels of corn per acre. Sugar cane does well. The level areas give uncertain yields. If the seasons are just right the crops are about as good as on the rolling areas, but if the seasons are at all wet the yields are inferior. They also are low during dry seasons, because the heavy clay subsoil prevents much root development below the surface few inches.

A great deal more can be done with this soil than is being done at the present time. Nearly every area has at least a slight fall in some direction. By ditching the depressions and laying off the rows so that they would drain themselves many areas not now used could be brought under cultivation and made to grow remunerative crops of cotton, corn, sugar cane, sorghum, and the grasses. Being a difficult soil to till, it will always be considered less desirable than some of the lighter-textured soils, but even this deficiency can be somewhat overcome by drainage and the incorporation of organic matter.

The following table gives the results of mechanical analyses of the soil and subsoil of this type:

Mechanical analyses of Lufkin clay.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
16902	Soil	0.0	0.6	1.1	3.8	1.8	75.2	16.7
16903	Subsoil	1.6	3.0	1.4	3.4	.5	32.1	57.5

OCKLOCKNEE LOAM.

The Ocklocknee loam varies considerably in the different areas and in different parts of the same area, on account of the modifying influences of the different upland soils. In general the soil is a brown, mellow, fine sandy loam from 12 to 24 inches deep, and the subsoil a grayish mottled clay loam or sandy clay. With the finer distinctions recognized the sandier areas would be classed as the Ocklocknee fine sandy loam. Other local spots would be classed with some of the heavier types.

Through the eastern third of the county the type has been modified more or less by the Selma chalk, which appears at the surface on many of the slopes, either as chalk or as the Houston clay. This influence is most noticeable along the smaller streams. The soil here is a brown to dark brown fine sandy loam, underlain at a depth of 12 to 24 inches by a black subsoil, varying in texture from a heavy loam to a heavy clay. In the larger bottoms the soil and subsoil answer to the general description given above.

The areas of this type along Browning Creek and its tributaries, in the southeast corner of the county, have a light-brown soil and a brownish-gray subsoil in most places. At varying depths, generally not exceeding 4 to 5 feet, a black clay is encountered. The light color of the soil is due to the large quantity of wash from the Susquehanna clay upland.

The areas in the western end of the county have not been influenced by the Selma chalk. The soil here is a brown or brownish-gray fine sandy to silty loam, underlain at a depth of 15 to 24 inches by a mottled gray clay loam or clay.

The principal areas in the western part of the county are along Golden Horn, Sand, Cypress, Big, and Trim Cane creeks and a few of their tributaries. These do not extend much farther east than the high rolling uplands. In the eastern part of the county the bottoms of Hollis, Skinner, Shaw, and Browning creeks and their tributaries are mostly of this type. Other areas are found in the upper bottoms of Sand and Catalpa creeks, also along Turkey Creek and a number of smaller streams. North of Starkville, Trim Cane Swamp is bordered by a low, irregular terrace of sandy lands. This terrace and the smaller bottoms draining the chalky areas are decidedly calcareous. The soil for the most part is a light brownish sandy loam, overlying a dark heavy subsoil. These areas were mapped as the Ocklocknee loam because their limited extent would not justify a separate classification. They grow about the same crops as the typical areas.

The larger areas are purely alluvial, while the smaller ones are partly alluvial and partly colluvial. Many of the areas mapped as this type had a much heavier soil before they were cleared. The black underlying material is this soil now buried by 2 to 6 feet of sandier material. There is so much erosion still going on along the slopes that further modifications in the type may be expected.

This type is nearly all under cultivation. It is used principally for corn and cotton, although a number of crops are grown in a limited way. It makes good oats, and produces heavy yields of sorghum, sugar cane, and Johnson grass. Alfalfa does well on the best drained areas. Cotton yields from one-half bale to 1 bale and corn from 25 to 50 bushels per acre. Seventy-five bushels of corn can be grown where the best methods of cultivation are used.

The areas influenced by the Selma chalk as a rule hold humus better than those along the western edge of the county, and the yields, too, are somewhat better, but the difference is not very marked. The variations in the type are not apparent in the crop, as similar variations would be in upland types, where the moisture conditions are not so uniform. Occasional overflows keep the soil in a moist condition.

Many of the bottoms need better drainage. Any seepage from the hills should be cut off by ditches. The damage from overflows could be greatly reduced by deepening and straightening the channels.

The following table gives the results of mechanical analyses of the soil and subsoil of the Ocklocknee loam:

Mechanical analyses of Ocklocknee loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
16884	Soil	0.1	0.8	1.6	20.4	7.9	51.8	16.9
16885	Subsoil	.0	1.0	2.5	30.0	3.4	45.8	16.9

CATALPA SILT LOAM.

The Catalpa silt loam, to a depth of 8 to 20 inches, is a dark brownish or brownish-gray fine heavy loam to clay loam. The subsoil varies from a jet black tough clay in the smaller bottoms to a dark grayish mottled clay of about the same texture in the larger bottoms. The soil generally is deeper and of a darker brown color in the small areas. Local areas have been modified by chalk washed from the adjacent slopes. The soil in such areas have a chalky-gray color, the subsoil usually being the same as elsewhere. The type as a whole has a much more friable soil than the Wabash clay, although it clods considerably under cultivation.

The type is confined to the eastern third of the county. The principal areas are in the bottoms of Ash, Sand, Brier, Catalpa, and Red Bud creeks. A few narrow strips were mapped in the bottom of Trim Cane Creek, bordering the chalky bluffs.

This is largely an alluvial soil built up from local wash and modified by calcareous material from the Selma chalk formation. The smaller strips and chalky areas referred to above have been laid down since the uplands were cleared. The black subsoil is what was the soil before the country was settled. In the large swamps the recent changes in the soil have not been so great on account of their being timbered and lying farther away from the source of the wash material.

To bring much of the type under successful cultivation it was necessary to deepen and straighten the streams. This has been done in nearly all of the smaller bottoms, and at different places in the larger bottoms of Sand and Catalpa creeks. Besides the undeveloped areas which only need to be drained to become valuable land, much yet remains to be done in the line of drainage to bring the cultivated areas up to a high state of development. A number of small areas are being ruined by seepage, while many others are swamped during every heavy rain with waters from the hillside streams. These conditions can be overcome at a small cost.

The Catalpa silt loam is one of the most highly prized soils in the county for all kinds of general farm crops. Cotton yields from one-

half bale to 1 bale and corn from 30 to 60 bushels per acre. Bermuda and Johnson grasses give heavy yields of hay. Oats, sorghum, and sugar cane also do well. Alfalfa stands well and yields heavily on the better drained areas, though only a few fields have been planted to alfalfa so far. Chief attention is given to cotton and corn. The yields of these two crops could be greatly increased if the land were given more thorough preparation.

The following table gives the results of mechanical analyses of the soil and subsoil of the Catalpa silt loam:

Mechanical analyses of Catalpa silt loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
16890	Soil	0.0	0.5	1.0	4.7	1.4	79.1	14.0
16891	Subsoil	.1	.9	2.0	14.1	4.8	63.1	15.4

OCKLOCKNEE CLAY.

The soil of the Ocklocknee clay, 4 to 6 inches deep, is a dark brownish-gray to brown loamy clay or heavy clay loam, containing very little material coarser than silt. Below this is a gray or drab, plastic silt clay, mottled and streaked with rusty brown and yellowish iron stains. The mottling decreases with depth and the color becomes a lighter gray. A cultivated field, when the soil is dry, has a grayish cast. The soil does not bake or crack badly on drying, and when wet it is much less plastic and sticky than the soil of the Wabash clay.

This is almost the exclusive type of the bottom lands through the flatwoods proper, where the Lignitic clay formation comes to or within a few feet of the surface. These bottoms vary from a few rods wide, along the smaller streams, to more than a mile wide in parts of the bottoms of Sun and Trim Cane creeks. They represent alluvial deposits built up from the Lignitic clay and the overlying silty material. The smaller areas usually represent a light phase of the type. Trim Cane Swamp, after it passes into the Selma chalk belt, has been influenced to some extent by wash brought down by the small streams. The soil on the south side of the stream, in places, is a dark-brown clay almost as heavy as the Wabash clay. The agricultural differences in these slight phases being of no consequence, no effort was made to show them on the soil map.

The small bottoms and parts of the large bottoms are subject to frequent overflows, especially during the winter months. Even the higher parts of the large bottoms are occasionally flooded. The natural drainage is not good, but extensive areas have been brought under successful cultivation by cleaning out and, in places, straight-

ening the streams. Many other areas are being farmed, where no effort has been made to improve the drainage conditions. About one-fourth of the type is now under cultivation. It is most extensively developed in the bottoms of Sun, Biba Wila, Lick, and Self creeks. There are also a number of areas along Trim Cane, Talking Warrior, and Chinchahoma creeks. If Trim Cane, Biba Wila, and Sun creeks were canaled, every acre of their bottoms could be brought under cultivation. Such an undertaking would prove very profitable, and it is only a question of time before something will be done in this line. The cultivated areas are now valued at $20 to $30 an acre.

Corn and cotton are the principal crops. Cotton yields from one-half to 1 bale and corn from 25 to 50 bushels per acre. Sorghum and sugar cane give heavy yields. Bermuda grass and alfalfa would prove paying crops where the land is well drained.

The following table gives the results of mechanical analyses of the soil and subsoil of this type:

Mechanical analyses of Ocklocknee clay.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
16888	Soil	0.0	0.6	0.8	3.5	1.7	45.9	46.9
16889	Subsoil	.1	.8	1.0	2.9	1.0	42.6	51.9

WABASH CLAY.

The Wabash clay, to a depth of 9 to 12 inches, is a very dark-brown to black clay, rendered loamy by a good supply of humus. The soil is very sticky and plastic when wet, but on drying it cracks and crumbles, for which reason it is often referred to as "buckshot land." When the moisture conditions are right, it can be reduced to fairly good tilth. Being very retentive of moisture, it will tide crops over prolonged droughts without much injury, if a surface mulch be maintained. The subsoil to a depth of 3 or more feet is a black or dark brownish mottled heavy clay.

The Wabash clay is the least extensive of the bottom-land types, and does not occur west of where the Selma chalk outcrops. It occurs principally along the small streams rising in Houston clay areas and in the larger creek bottoms bordering the chalky bluffs or Houston clay areas on the south. The exception to this is found in the lower bottoms of Browning Creek, where one of the largest areas mapped is found. The bottoms of Okahatta, Ittobechi, and Josey creeks are entirely of this type, also most of that of Rocky Bottom Creek. The area lying mainly in sec. 32, T. 20, R. 15 E., and the one in sec. 1, T. 19, R. 15 E., occupy slight elevations sloping gently toward the

creeks. They are above overflow. A few small areas occur similarly farther west along Trim Cane and Sun creeks.

All of the small bottoms occupied by this type are subject to occasional overflows. Otherwise they are fairly well drained in most places. The areas in Sand and Catalpa creek bottoms need better drainage.

Nearly all of the Wabash clay is under cultivation. It is a difficult soil to handle, but it is highly prized for the growing of corn, cotton, and forage crops. Cotton does not fruit heavily, but it grows large enough to give good yields anyway. Practically all of the strip along Ittobechi Creek is used for hay and pasturage. The area in sec. 32, T. 20, R. 15 E. is devoted to grass and alfalfa, and that in sec. 34, T. 20, R. 14 E. has recently been planted almost entirely to alfalfa. The other areas are devoted mostly to cultivated crops. The tendency is to grow more alfalfa and grasses for hay. Both Bermuda and Johnson grass give heavy yields. Alfalfa is proving a very successful crop where the drainage is good. Cotton yields one-half bale to 1 bale and corn from 30 to 60 bushels per acre.

WAVERLY LOAM.

The Waverly loam, typically, consists of 7 to 10 inches of light to medium loam, gray in color, underlain by a light-gray fine sandy clay that extends to a depth of several feet. The soil shows some mottling, and in most places does not contain much humus below the immediate surface. Narrow strips along the streams have a brownish friable soil, varying from a fine sandy loam to a silt loam. The subsoil is a light-brown heavy silt loam or very fine sandy clay. In all but the better drained areas the soil has a tendency to clod.

This type is confined to the alluvial bottoms of Sand Creek and Noxubee River, along the southern border of the county. Farther east, in the large bottom of the Noxubee River, it grades into the Waverly clay. These bottoms are poorly drained, and large areas back from the streams are kept almost saturated with water, except during dry weather. Practically all of the type is subject to overflow and the lower areas are flooded not only at frequent intervals during the winter months, but also occasionally during the summer.

The timber growth consists principally of oak and sweet gum, in some of the sloughs and wet places cypress is found, and the better drained strips along the streams support a mixed growth of oak, beech, holly, sycamore, etc.

The few areas under cultivation are confined largely to the better drained lands. Crops are rendered uncertain by overflows. If the seasons are not too wet, cotton and corn give good yields.

With good drainage the Waverly loam would be classed among the best land of Oktibbeha County.

The following table gives the results of mechanical analyses of the soil and subsoil of this type:

Mechanical analyses of Waverly loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
16942	Soil	0.0	0.3	0.4	33.8	14.5	37.8	13.3
16943	Subsoil	.0	.4	.3	24.5	10.4	43.2	20.9

WAVERLY CLAY.

The surface 3 to 6 inches of the Waverly clay consists of a mottled grayish or brownish-gray, slightly loamy silt clay. This gives way directly to a light-gray mottled silt clay, which is very soft when wet, but not very plastic. Where cultivated the soil bakes and clods and otherwise shows the need of better drainage. The organic content is rather low.

The Waverly clay occurs along the southern edge of the county in the Noxubee River bottom, and is also the most extensive type in the larger bottoms of Big and Cypress creeks. It represents purely alluvial material transported for some distance, in this respect differing from the Ocklocknee clay, which has been influenced locally by the Lignitic clay formation. It is lighter colored and much less plastic than the Ocklocknee clay.

The principal timber growth consists of sweet gum, oak, and scattering hickory. Cypress trees are found in some of the wetter strips, while some of the better drained areas support a mixed growth of oak, hickory, holly, and beech.

Only a small acreage is under cultivation. A few small areas are farmed without providing any artificial drainage. With good seasons cotton will yield as much as three-fourths bale, and corn from 20 to 50 bushels per acre. The crops are rather uncertain on account of wet seasons and overflows.

The Waverly clay, with the Waverly loam, offers excellent opportunity for extensive drainage work. A project to reclaim all the affected areas of these two valuable soils could be carried through with absolute certainty of profitable results.

The following table gives the results of mechanical analyses of the soil and subsoil of this type:

Mechanical analyses of Waverly clay.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
16944	Soil	0.1	1.2	0.8	4.2	3.6	57.4	33.2
16945	Subsoil	1.6	2.1	1.3	4.8	1.9	53.7	33.8

SUMMARY.

Oktibbeha County, comprising about 446 square miles, lies in the eastern part of Mississippi. It is crossed by three main physical divisions, differing in topography, soils, and extent of development. The eastern third, which is in the limestone belt, and the better parts of the red hill region, along the western boundary, are fairly well settled, but the intervening flatwoods section, except in a few neighborhoods, is very sparsely settled. The negroes are confined largely to the eastern part of the county, where they tenant a great deal of the lands.

Starkville, population 2,000, is the county seat and chief market. Fairly good railroad transportation facilities are had. The public roads are good the greater part of the year.

The climatic conditions in the county are very favorable to a wide variety of crops for home consumption.

Cotton is the important crop. Though corn is grown extensively, the majority of the farmers do not produce enough for their own use. The more progressive are beginning to grow hay for the market and find it very profitable. A few others have profitable dairy herds. Very little fruit or truck growing is done, although there are soils in the county admirably adapted to these lines of farming. Practically nothing has been done so far in the line of stock raising.

Peas and other leguminous crops should be grown extensively as a means of improving the soil. No commercial fertilizers are used, except on some of the sandy lands, principally through the western part of the county.

The tenant system prevails, and there is little difficulty in securing labor under this arrangement. Floating labor is, in general, scarce.

The census of 1900 reports 207,895 acres in farms, of which about one-half is improved. Thirty per cent of the farms are operated by the owners, the remainder by tenants. Land values are still comparatively low.

The county has a great diversity of soils. In all 21 types were recognized.

The Oktibbeha fine sandy loam is best adapted to cotton, corn, and forage crops, and peaches, pears, and plums do well. The soil is easy to improve.

The Oktibbeha clay, being largely an erosion type, is droughty and hard to handle. The type should be devoted to pasturage.

The Oktibbeha silt loam is one of the flatwoods types and has poor natural drainage. The few areas farmed produce light yields of cotton and corn. With good drainage established the soil would prove well adapted to a variety of crops.

The Oktibbeha clay loam, though confined to the flatwoods belt, is rolling enough to have good drainage. It is extensively farmed and especially adapted to cotton, grain, and grasses.

The Orangeburg fine sandy loam is a hilly type, and only a small portion of it is under cultivation. Cotton gives light yields, except where commercial fertilizers and coarse manures are used. Peaches would do well and probably tobacco on some of the best areas.

The Orangeburg clay is very limited in extent and so badly eroded as to be, in most cases, unfit for agriculture. A few small areas produce good crops of cotton. The badly eroded areas should be used for Bermuda grass or abandoned to forest.

The Norfolk fine sandy loam is best adapted to cotton and early truck. It is being used principally for cotton and corn. Some system of rotation should be practiced so as to keep the soil better supplied with humus.

The Myatt fine sandy loam is not farmed to any extent. Crops often suffer from the lack of drainage. With good drainage the type would grow corn, oats, and forage crops. Areas near the railroad would prove valuable for the production of strawberries.

The Myatt clay loam is very limited in extent. The few areas under cultivation, except during wet seasons, give better yields than the lighter upland soils. Corn and cotton are about the only crops grown. Oats would do fairly well. The yields would be much better if good drainage were established.

The Susquehanna silt loam produces fairly good crops of cotton, corn, and oats. Bermuda grass would afford good pasturage. A large percentage of the soil is under cultivation.

The Susquehanna clay is badly run down in most areas, and large tracts have been practically ruined by erosion. The yields of cotton and corn are light. The rough, eroded areas should be sodded to Bermuda and devoted to pasturage. Stock raising and dairying are two promising industries for the type.

The Houston clay is the most highly prized of the upland soils for all of the crops of the area. Cotton, corn, grasses, and melilotus make a luxuriant growth. Bermuda grass makes excellent pasturage. Alfalfa does exceptionally well. The Houston clay is a good soil for all kinds of farming, except truck and fruit growing.

The Houston chalk for a long time was looked upon as being practically worthless, but now it is beginning to be regarded as quite valuable for pasture lands. Where there is any soil melilotus thrives, and the better areas grow good grasses. The type should not be cultivated.

The Lufkin silt loam is level and naturally poorly drained. It would make excellent land for cotton, corn, and forage crops if good drainage were established.

The Lufkin clay is the main flatwoods type, only about 10 per cent being under cultivation. Areas rolling enough to provide good surface drainage will grow good crops of cotton, corn, sugar cane, and grasses, but the level areas give uncertain yields. It is difficult to till and in this respect less desirable than the lighter textured soils.

The Ocklocknee loam is the lightest textured of the alluvial types and nearly all of it is under cultivation. All properly cultivated crops produce heavy yields. Cotton does not do well in most areas on account of overflows. The type is best adapted to corn, oats, sorghum, sugar cane, and grasses. Alfalfa does well on the best drained areas.

The Catalpa silt loam is a grade heavier than the Ocklocknee loam, but the two types are adapted to the same line of crops and the yields are not much different. A great many of the cultivated areas need better drainage. The undeveloped areas only require drainage to become valuable land.

The Ocklocknee clay is the most extensive of the bottom-land types. The natural drainage is not good, but extensive areas have been brought under cultivation by clearing out and in places straightening the streams. Many other areas are being farmed where no effort has been made to improve the drainage conditions. The drained areas are highly prized for cotton and corn. A number of other crops would do equally as well.

The Wabash clay is not extensive and occurs only in the limestone section. It is rather a hard soil to handle, but produces good crops of corn, cotton, and grasses. The best drained areas are well adapted to alfalfa.

The Waverly loam and the Waverly clay are poorly drained types along the larger streams in the southern part of the county. Cotton and corn are grown on the small areas under cultivation, and in dry seasons the yields are usually good. The two types offer an excellent opportunity for extensive drainage work. The project to drain these swamps can be gone about with absolute certainty of profitable results.

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SOIL MAP

MISSISSIPPI
OKTIBBEHA COUNTY SHEET

SOIL PROFILE
(3 feet deep)

- Oktibbeha fine sandy loam — Fsl / Sc
- Houston chalk
- Oktibbeha silt loam — Sil / Sil
- Susquehanna silt loam — Sil / Hc / C
- Oktibbeha clay loam — Sil / Sic
- Susquehanna clay — Fsl / C
- Oktibbeha clay — Sc
- Luflkin silt loam — Sil / Sic
- Orangeburg fine sandy loam — Fsl / Sc
- Luflkin clay — Sil / C
- Orangeburg clay — Sc
- Ocklocknee loam — Fsl / Cl
- Norfolk fine sandy loam — Fsl / Sc
- Ocklocknee clay — C / Sic
- Myatt fine sandy loam — Fsl / Sc
- Catalpa silt loam — Sil / Sil
- Myatt clay loam — Sil / Sic
- Wabash clay — C / C
- Houston clay — C / C
- Waverly loam — L / Fsc
- Waverly clay — Sic / Sic

LEGEND

Fsl	Fine sandy loam
Sc	Sandy clay
Sil	Silt loam
Sic	Silty clay
C	Clay
Hc	Heavy clay
Cl	Clay loam
L	Loam
Fsc	Fine sandy clay
	Decomposed rock

LEGEND

- Or — Oktibbeha fine sandy loam
- Hc — Houston chalk
- Os — Oktibbeha silt loam
- S — Susquehanna silt loam
- Ol — Oktibbeha clay loam
- Sc — Susquehanna clay
- O — Oktibbeha clay
- Ls — Luflkin silt loam
- Osl — Orangeburg fine sandy loam
- L — Luflkin clay
- Oc — Orangeburg clay
- Ock — Ocklocknee loam
- N — Norfolk fine sandy loam
- Ok — Ocklocknee clay
- Ml — Myatt fine sandy loam
- C — Catalpa silt loam
- Mc — Myatt clay loam
- W — Wabash clay
- H — Houston clay
- Wl — Waverly loam
- Wc — Waverly clay

Soils surveyed by
W. E. Mc Lendon and Lewis A. Hurst
1907.

Scale 1 inch = 1 mile

A. Hoen & Co. Lith. Baltimore, Md.

Field Operations
Bureau of Soils
1907